

STATE OF VERMONT  
PUBLIC SERVICE BOARD

Docket No. 7704

Petition of Green Mountain Power Corporation for       )  
approval of its Advanced Metering Infrastructure Plan    )

Order entered: 7/22/2011

**I. INTRODUCTION**

In this Proposal for Decision ("PFD"), I recommend that the Vermont Public Service Board ("Board") approve the Advanced Metering Infrastructure Plan ("AMI Plan") filed by Green Mountain Power Corporation ("GMP" or the "Company") for implementation of its AMI Project (the "Project") in its service territory. In this Order, I also recommend that the Board approve a Memorandum of Understanding (the "Docket 7704 MOU") between the Vermont Department of Public Service ("Department") and GMP.

**II. BACKGROUND AND PROCEDURAL HISTORY**

On August 3, 2009, the Board issued an Order in Docket 7307 approving a Memorandum of Understanding ("Docket 7307 MOU"), with certain modifications, among the Department and interested parties, including GMP. The Docket 7307 MOU provided a regulatory framework for the review and approval of utility-specific AMI Implementation Plans and supporting Business Case Analysis.

On January 7, 2011, GMP filed its utility-specific AMI Implementation Plan including the supporting Business Case, Measurement & Verification Plan ("M&V Plan"), qualitative description of benefits, and communications plan. The Board opened this docket to consider GMP's AMI Plan and appointed me to serve as the Hearing Officer.

On January 24, 2011, Board staff conducted a workshop in Dockets 7704 and 7612 (which concerns Central Vermont Public Service Corporation's ("CVPS") AMI Plan). At the workshop, interested parties discussed GMP's and CVPS's joint proposal for an intermediate and backhaul network solution. GMP stated that it planned to pursue a communications solution to

leverage the federal grant awarded to the Vermont Telephone Company, Inc. ("VTel") to install a 4G long-term evolution ("LTE") network in the State. GMP indicated that it would provide an update to its AMI Plan after the communications solution was finalized.

On January 25, 2011, GMP filed a Motion for Protective Order and a Protective Agreement between it and the Department.

On February 7, 2011, I held a prehearing conference in this docket.

On February 28, 2011, GMP filed prefiled testimony to support its AMI Plan. GMP also filed a revised Business Case spreadsheet and an update on its Meter Data Management System ("MDMS") and web presentment solutions.

On March 14, 2011, the Department filed a letter in support of GMP's AMI Plan subject to the satisfactory provision of additional information.

On March 25, 2011, GMP filed a second revised Business Case spreadsheet, a supporting memorandum from Brian Otley, and written responses to the questions outlined in the Department's March 14 letter.

On April 14, 2011, I conducted an evidentiary workshop at which GMP made a presentation on its AMI Plan. GMP responded to questions raised by Board staff and the Department. GMP's respondents were duly sworn in as witnesses. The evidentiary workshop was also attended by representatives of CVPS, Vermont Energy Investment Corporation, and Vermonters for a Clean Environment. There being no objections, I admitted the Prefiled Testimony of Brian Otley and associated exhibits, granted GMP's Motion for Confidential Treatment, and approved the Protective Agreement.

On April 22, 2011, GMP filed a draft PFD. The Department filed comments on the draft PFD on May 6, 2011. Also on May 6, GMP filed a rate impact analysis and requested that the supporting documents be admitted into the record. GMP represents that the Department does not object to the admission of these documents.<sup>1</sup>

On May 9, 2011, the Department filed a letter, including two exhibits, reiterating its support of GMP's AMI Plan. Exhibit DPS-1 is a document entitled Desired Technical

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1. I hereby admit the rate impact analysis and supporting documents filed by GMP on May 6, 2011, into the evidentiary record as Exh. GMP-AMI-11.

Capabilities and is the result of collaboration among the Department, GMP, and CVPS. The Department and GMP agreed to certain modifications to the initial capabilities document based on discussions regarding whether GMP's AMI vendor, Elster, could deliver additional capabilities. Exhibit DPS-2, entitled Addendum to Desired AMI Technical Capabilities for GMP and Elster, is the result of these discussions.<sup>2</sup>

On May 23, 2011, GMP and the Department jointly filed a revised draft PFD.

On May 26, 2011, GMP filed the Docket 7704 MOU between it and the Department.<sup>3</sup>

### **III. FINDINGS**

Based on the evidence of record, I hereby report the following findings to the Board in accordance with 30 V.S.A. § 8.

#### *General*

1. The AMI Plan describes the AMI system that GMP plans to install and the schedule for installation. GMP provides a detailed business case analysis to quantify the costs and benefits of the Project. GMP also describes benefits that it cannot easily quantify. Otley pf. at 2-3; exhs. GMP-AMI-4, GMP-AMI-7, and GMP-AMI-8.

2. GMP's implementation of the AMI Plan is in the public interest, especially in light of the 50% matching funds provided by the US Department of Energy ("DOE") through the Smart Grid Investment Grant ("SGIG"). Otley pf. at 3.

3. As the Business Case demonstrates, the AMI Plan is cost-effective based upon the assumptions contained in the analysis which includes approximately \$11 million of SGIG funding. Implementation of AMI in its service territory will allow GMP to lower its operating costs and enhance service offerings for its customers. Otley pf. at 3.

4. The AMI Plan includes the minimum functional requirements required by the Docket 7307 MOU and the subsequent Board Order in that Docket. The AMI Plan also provides

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2. I hereby admit Exhs. DPS-1 and DPS-2 into the evidentiary record.

3. I hereby admit the Docket 7704 MOU into the evidentiary record as Exh. MOU-1.

flexibility that will allow GMP to proceed in a manner that meets the goals outlined in the Docket 7307 MOU while fostering a prudent approach given the evolving technology and changing costs. Otley pf. at 3.

5. The AMI Plan is reasonable. MOU-1 at 2.

#### *U.S. Department of Energy Funding*

6. GMP partnered with other Vermont utilities to submit an application to the US DOE to obtain funding as part of the SGIG program. The SGIG program is expected to accelerate the transformation of GMP's electric transmission and distribution systems by promoting investments in smarter grid technologies, tools, and techniques. GMP AMI Plan at 8.

7. GMP's share of the grant is \$19.2 million. GMP intends to allocate approximately \$11 million for the deployment of its AMI system. The remaining approximately \$8 million will be used to implement grid automation and Customer Information System ("CIS") projects. Thus GMP's overall Smart Grid efforts are comprised of three separate projects: AMI; grid automation; and CIS overhaul. The AMI Plan does not address the grid automation component and includes certain portions of the CIS component. GMP has included, or will incorporate in the future, the following CIS-related projects in its AMI plan as they are elements that impact a customer's experience of AMI: dynamic rates; incorporation of consumer-side technologies; web presentment; and customer outreach programs. GMP AMI Plan at 8, 17-19, 31-32, 34; Otley pf. at 3-4; tr. 4/14/11 at 14-16, 22-24, 49-51 (Otley) and 87-90 (Morris); exh. GMP AMI-10.

#### *Docket 7307 and Additional Requirements*

8. GMP plans to purchase and install an AMI system that will support the following features:

- Two-way communications: Ability to poll the smart meter to gather data from and send data;
- Central collection point and data repository: Ability to time-stamp and store interval data in a centralized location;
- Interval data: Provide and store consumption data at a minimum of 15-minute intervals;

- On-demand readings: Interrogate the smart meter at any time for a reading;
- Power outage notification: Capable of capturing power outage information;
- Tamper detection alerts: Notifies the utility of potentially suspicious events that may include meter removal and inversion;
- Remote firmware/software upgradability: Ability to utilize end devices such as smart meters and In-Home Displays ("IHDs") that have the latest revisions and enhancements added to them without the utility visiting the premises;
- Open standards: Support open standards to make integration with other enterprise systems easier, to improve the flow of data, and to automate workflow processes;
- Net metering: Support net metering for alternative energy sources connected to the distribution system;
- Whole-house service switch: Ability to remotely turn on or off the entire service to the premises;
- Home-Area Network ("HAN") communications: Ability to provide customers and appliances with real-time pricing information to assist them in making informed decisions on consumption;
- Voltage recording: Ability to ensure that voltages are within proper limits, to assist with voltage-reduction opportunities, and to improve system losses;
- Load control: Ability to remotely turn on or off a predetermined load as established with the customer and ability for the customer to choose whether to conserve energy usage based on utility-provided real-time pricing;
- Web presentment: Provide internet tools to customers to increase awareness of energy consumption and associated costs by viewing their interval data; and
- Third-party accessibility: Parties other than the utility and its customer may access meter data with appropriate security measures that ensure the integrity of the data is not compromised.

GMP AMI Plan at 12-13; Otley pf. at 3.

9. GMP intends to select an AMI system that would likely support the following additional functional requirements:

- Advanced outage management: Utility would have the ability to poll end devices to gather information to assess the scope of an outage and restoration progress. This should result in improvements in the restoration process and a reduction in outage duration and associated expenses;
- Power quality recording: Utility would have the ability to collect advanced power quality data which would likely include sags, swells, power quality interval data, or harmonic information; and

- Distribution system monitoring and control: Utility would have the ability to improve control of its distribution system by remotely monitoring and controlling devices such as capacitor banks to enhance system integrity and gain efficiencies.

GMP AMI Plan at 14; Otley pf. at 3.

10. GMP intends to acquire, and its AMI vendor has agreed to provide, an AMI system with the following desired technical capabilities. These capabilities are in addition to those required under Docket 7307 and GMP's decision to obtain these capabilities does not constitute an agreement or obligation to utilize these capabilities in a specific timeframe:

- Dissemination of new system messages to all of the meters served by the AMI system: the system should have the capability to broadcast a new message that is received by all meters within three (3) minutes of initiation and the system should be able to send at least one broadcast message every five (5) minutes, under normal communications networks operating conditions;
- Presentation of AMI broadcast messages on a company-provided web presentment interface and an interoperable IHD. With regard to interoperability, GMP will maintain a list of Zigbee-compliant<sup>4</sup> IHDs that would operate with its AMI system;
- Recordation and storage of usage interval data within the meter at a minimum of five-minute intervals;
- Presentation of the current usage data in the meter via an IHD, within the Zigbee specification for communication latency to a Zigbee compliant device. All data stored in the meter should be made available for communication via the Zigbee channel as IHD capabilities increase in the future;
- Generation of an on-demand meter read request from the AMI Master Station to a specified, individual meter and retrieval of the current meter reading. On-demand meter read request should return the current reading on the meter within fifteen (15) seconds to the AMI master station under normal communications networks operating conditions. Network designs should anticipate capacity to ensure that at least 1% of meters served by each collector point may be read on-demand each minute, with reasonable accommodation (not more than 5 seconds) for backhaul network latency under normal communications networks operating conditions;
- Generation of an on-demand event from the AMI Master Station to retrieve, from a specified individual meter, all meter interval data subsequent to the most recently recorded meter interval in the Master Station. The on-demand event should return the interval data within twenty (20) seconds to the AMI Master Station under normal communications networks operating conditions. Network design should anticipate capacity to ensure that at least 1% of meters served by each collector point may

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4. Zigbee protocols are based on IEEE standards for wireless personal networks. GMP AMI Plan at 16.

successfully complete this on-demand event each minute, with reasonable accommodation (not more than 5 seconds) for backhaul network latency; and

- Accessibility of AMI Master Station application program interfaces ("API") in order to promote integration of Master Station functionality into broader end-to-end workflows. In the interest of achieving customer benefits in the short and long term, there is an expectation that APIs will be utilized in the AMI system and other systems to deliver workflows across vendor solutions.<sup>5</sup>

Exh. DPS-1.

11. If GMP's AMI vendor is not able to satisfy the desired technical capability for generation of an on-demand event from the AMI Master Station, then the vendor will come as close as possible to satisfying such capability, but in any event will at a minimum satisfy the following technical capability:

Under normal operating conditions with a stable, established network and with the third party Wide-area Network ("WAN") running to the appropriate specifications, the Master Station will have the ability to extract up to 12 hours of 2-channel, 15-minute interval data within 20 seconds from a communicating meter. Additionally, the Master Station will read up to 5 meters served by each Gatekeeper (or, collector) within 65 seconds including WAN latency. In this scenario all meters requiring an on demand read would be entered as part of a batch command with the Gatekeeper configured to respond to this request as the highest priority. The targeted release date for this functionality, which would include a head-end upgrade and a gatekeeper firmware upgrade, will be the end of the first quarter of calendar year 2012. This functionality will be made available under the terms of the system maintenance agreement.

Exh. DPS-2.

### *AMI Components*

12. GMP will implement AMI throughout its entire service territory by replacing the 96,211 existing electric meters with smart meters. The AMI Plan describes a meter deployment strategy that will enable GMP and its customers to benefit from new information and service offerings.

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5. An example of a workflow that spans across vendor solutions would be a customer-facing, web-based usage presentment session offering a "retrieve most recent usage data" function that sends a request via an API to the AMI Master Station where it is received and processed as an on-demand read message to the specific meter/meter collector. The response back from the meter/meter collector would be received by the AMI Master Station and sent via an API to the customer-facing, web-based usage presentment session for display to give the customer the experience of bringing their most recent usage data to their web session in near real-time, though it would be identified as unverified.

The initial phase of the Project is estimated to be completed by April 17, 2013, in accordance with the three-year timeline set forth in the SGIG agreement. GMP AMI Plan at 10.

13. GMP is collaborating with CVPS to implement a common AMI solution that takes advantage of resulting cost-efficiencies. GMP AMI Plan at 23-24.

14. GMP's AMI system will consist of three components: (1) a smart meter located at the customer premise; (2) a communications network; and (3) a master station located at the utility headquarters. GMP AMI Plan at 11.

#### Smart Meters

15. Smart meters record and store interval usage data, register billing data for dynamic rates, register demand readings, report power supply status, and turn power on or off remotely utilizing a built-in service disconnect switch. Smart meters can relay price signals to and within the home via web presentment and IHDs. GMP AMI Plan at 11.

16. The AMI system's concentrators will routinely read each residential meter's billing and status data. The meters have flexible billing and data options and can be upgraded remotely, thereby eliminating a site visit by meter personnel. Meters can report: kWh usage; kVAR or kVAh consumption; load profiling (4-channel recording is available on a 5, 15, 30 or 60 minutes basis); tamper detection; and the status of the disconnect switch. GMP AMI Plan at 15-16.

#### Communications Network

17. GMP's proposed long-term communications strategy for its AMI Project, addressing both intermediate and backhaul network needs, is to utilize the public 4G LTE (Long Term Evolution) network being constructed by VTel in the State through a federally-funded grant to promote broadband access in rural areas. GMP and CVPS will be providing capital to VTel to expand its LTE network to include coverage to all areas of their service territories where meter network or distribution automation connectivity is needed. Exh. GMP-AMI-10 at 10; tr. 4/14/11 at 18-19, and 113 (Otley).

18. While the VTel network is being constructed, GMP intends to deploy an interim communications solution. GMP is currently exploring a service agreement with AT&T Mobility. Using connectivity via a network like AT&T will delay some of the benefits described in GMP's Business Case, but would allow GMP to begin operating its AMI system for core utility



operations. Exh. GMP-AMI-10 at 10.

19. GMP will provide a formal update on the VTel solution when analysis of the solution is complete and terms and conditions of the arrangement are finalized. Exh. GMP-AMI-10 at 10.

Master Station/Head-End System

20. GMP's head-end system will consist primarily of a Master Station, a Meter Data Management System ("MDMS"), and web-presentment services. GMP AMI Plan at 18-20; tr. 4/14/11 at 17, and 35-36 (Otley).

21. The Master Station performs several important functions including the management of the AMI communications network, scheduling and collection of meter readings, and coordination of routine customer and meter changes to ensure that all meters are read. GMP AMI Plan at 19; exh. GMP-AMI-10 at 7.

22. The Master Station also interfaces with enterprise systems to provide seamless integration and is flexible enough to support the growing needs of a utility to provide network monitoring, control of grid management, and reporting capabilities. GMP AMI Plan at 19-20.

23. Remote firmware upgrades and system configuration are also managed by the Master Station. GMP AMI Plan at 20.

24. GMP has selected Elster as its vendor to supply the AMI technologies and services. GMP AMI Plan at 23-24; exh. GMP-AMI-1; tr. 4/14/11 at 19 (Otley).

25. The MDMS is a repository for the data collected from the meter network by the Master Station so that the data can be verified, edited, and estimated prior to being made available for integration with other utility systems and critical operations. Exh. GMP-AMI-10 at 7; tr. 4/14/11 at 37-38 (Otley).

26. The MDMS is the piece of the head-end system that facilitates the presentment of customer information on the internet by serving as the long-term archive for interval usage data. It also supports the implementation of non-traditional rate structures like dynamic rates and the integration of outage management systems with AMI. GMP AMI Plan at 18-19; tr. 4/14/11 at 37-38 (Otley).

27. AMI provides voluminous data that has to be managed in an efficient way and integrated into various applications. GMP's MDMS will provide enhanced data management including, but

not limited to:

- Usage and power quality data aggregation;
- Usage validation, edits, and estimations for set intervals (examples: hourly, half-hour, quarter-hour);
- Bill determinant calculations and validations for all rates;
- Complete data settlement;
- Real-time outage information;
- Validating and filtering real-time messages;
- Correlating multiple messages and events;
- Validating distributed data (connected model, street-level routing, customer outage) and AMI outage notification/verification;
- Time-synchronized energy consumption;
- Aggregating interval data for each distribution transformer to determine peak load per transformer and combining this information with transformer asset data and, potentially, system peak load information as well; and
- Combining raw data from AMI with connectivity data and asset data.

Exh. GMP-AMI-2 at 1.

28. GMP plans to purchase the MDMS from Oracle as a part of its new Customer Care and Billing system. This system will also include a web presentment service that can be offered through the existing website. The web presentment features will include:

Customer Functionality Requirements

- Usage data - time intervals by meter;
- Usage data - data to be displayed by interval;
- Other Data (such as weather);
- Trend analysis;
- Forecast analysis;
- Rate change analysis;
- Rate change analysis for real-time pricing;
- Handling of multiple accounts;
- Data extraction, download, and storage; and
- Efficiency results.

#### Consumer Self-Service Features

- Account access/portal; and
- Home audit and profile

#### Customer Service Representative ("CSR") Access

- Viewing rights; and
- CSR "ride-along" with customer.

Exh. GMP-AMI-2 at 1-2.

29. GMP will provide energy usage information via web presentment within 24 hours of the customer's usage. After full meter installation has been achieved, GMP will strive to decrease the amount of time lag from actual usage to data presentment on the web. Tr. 4/14/11 at 72-73 and 77-78 (Otley).

#### *Home Area Network and Dynamic Rates*

30. The AMI Project will allow GMP to offer dynamic and other time-based rate designs, including new demand response programs. The Project will also enable energy efficiency measures to be implemented on the customer side of the meter such as IHDs and end-use controls. GMP AMI Plan at 10-11 and 17-18.

31. GMP's initial phase of its AMI Project does not include the deployment of customer-side systems, such as the HAN or IHDs. However, GMP's smart meter solution includes a ZigBee communication device that will allow a customer to add HANs and IHDs prior to GMP offering such devices. The ZigBee component is the industry standard for smart meters to communicate with IHDs. This technology is flexible enough to allow the consumer the choice of HAN and IHDs. GMP is developing a business process that will allow it to identify, certify and register customer-owned HANs and IHDs. GMP AMI Plan at 17; tr. 4/14/11 at 55-57 (Morris); tr. 4/14/11 at 57-58 and 102-03 (Otley).

32. Zigbee solutions include the following capabilities: commission and decommission IHDs; remotely control thermostats and load control devices; send messages to IHDs; and communicate load control start and stop times, duty cycle, and temperature set points. GMP AMI Plan at 16.

33. Among all the technical components involved in the deployment of smart meters, the customer-side devices are changing the most rapidly. Standards have not been established, end-user devices are going through fast-paced innovation cycles, and price/performance changes occur on a quarterly basis. GMP plans to avoid aggressive adoption of in-home technologies until these issues are resolved. GMP AMI Plan at 18; tr. 4/14/11 at 67-69 (Scott).

34. As part of the collaboration among utilities within the SGIG program, GMP will be following the Consumer Behavior Studies ("CBS") being conducted by Vermont Electric Cooperative, Inc. ("VEC"), and CVPS. Each of these plans will test a variety of consumer-side technologies to generate research data on acceptance and utilization of these technologies and devices. The results and conclusions of the first CBS are scheduled for release in the second quarter of 2013, which is also the end of the SGIG implementation period in Vermont. The conclusion and results of the second CBS are scheduled for mid-2014. As a result, GMP does not plan to implement customer-side technologies, other than certifying the availability of the ZigBee communications channel within the meter for future use, prior to the end of the SGIG project period. Exh. GMP AMI-10 at 9; tr. 4/14/11 at 55-57 (Morris); tr. 4/14/11 at 75 (Otley).

35. GMP has not yet provided a specific proposal for the implementation of dynamic rates. GMP plans to utilize data and recommendations from the CVPS and VEC rate studies to develop rate offerings that benefit the company and its ratepayers. GMP AMI Plan at 13.

#### *Meter Installation*

36. GMP plans to install the first smart meter in the fall of 2011, followed by an 18-month deployment that will be completed in early 2013. This schedule assumes approximately 2,300 smart meters will be installed per week. Manual meter reading routes will be sequentially converted to AMI on a district-by-district basis. Each route should be completed to the fullest extent possible before work begins on another route. This will enable manual meter reading routes to be systematically eliminated, enabling GMP to reassign meter readers to other responsibilities. GMP AMI Plan at 24.

37. GMP and its AMI contractor will ensure that meter installations occur in a manner that does not unnecessarily affect, or interrupt, customer bills. GMP AMI Plan at 24.

*Business Case*

38. As required by the Docket No. 7307 MOU, GMP provided a Business Case with its AMI Plan. GMP AMI Plan at 26-32; exh. GMP-AMI-4.

39. The total cost of the AMI Project as described above is estimated to be \$21,261,649. The SGIG award will provide funding for approximately 50 percent of the Project costs. The estimated net cost to GMP is \$10,682,855. Exh. GMP-AMI-4; Otley pf. at 3.

40. The Business Case analysis presents the results that GMP believes are most likely to be achieved. GMP also developed high and low estimates of the potential benefits achieved. GMP AMI Plan at 26.

41. GMP anticipates that it will achieve the following benefits from the implementation of its AMI Plan:

- Reduction in meter reading costs (\$904,625 annual benefit; \$250,000 one-time benefit);
- Reduction in collection costs (\$63,616 one-time benefit);
- One-time cash flow advance (\$544,798 one-time benefit);
- One-time benefit based on meter accuracy (\$818,757 one-time benefit);
- Reduction in costs based on outage and storm restoration (\$48,041 annual benefit);
- Increased revenue from reduction in energy theft and diversion (\$102,372 annual benefit);
- Reduction in support service costs (\$30,343 annual benefit); and
- Delay of asset investments (\$7,500 annual benefit).

GMP AMI Plan at 28-31; exh. GMP AMI-4.

42. GMP's currently low meter reading cost levels have been achieved by adopting technologies over the past 10 years. As a result, many of the cost savings GMP could achieve through AMI have already been achieved through its previous cost-saving efforts. GMP AMI Plan at 5-7; tr. 4/14/11 at 12-13 (Otley).

43. The costs and benefits described above were modeled over a 20-year useful life of the system. This financial analysis includes GMP's SGIG award. Under the most-likely scenario, the Project's positive cash flow has a Net Present Value ("NPV") of approximately \$503,144 with

a 7.9% internal rate of return. Petitioner utilized a 7.1% discount rate in its Business Case. Exh. GMP-AMI-4; tr. 4/14/11 at 18 (Otley); tr. 4/14/11 at 41 (Kvedar).

44. The quantifiable benefits included in the NPV calculation are primarily based on operational savings. Additional benefits are likely to accrue with full deployment of the AMI system, implementation of new rate designs, and the use of IHDs. Moreover, the combination of AMI and other Smart Grid efforts (i.e., grid automation) may lead to additional benefits. GMP AMI Plan at 31-32; Otley pf. at 5; tr. 4/14/11 at 46-47 (Otley & Morris).

*Review Process for AMI Plan Revisions and Updates*

45. The Docket 7704 MOU provides that GMP will file AMI Plan updates, including Business Case revisions, as appropriate, on the subjects listed below. Should GMP be unable to meet the identified target dates or a date is not specified below, GMP will file quarterly updates with the Board and the Department on the status of each the following issues:

- Rates Roadmap (9/30/11);
- Communications backhaul network solution (upon completion of VTel contract);
- Opt-out provision (8/1/11);<sup>6</sup>
- Agreement with the Energy Efficiency Utility (7/31/11);
- Web presentment solution (7/1/12); and
- Measurement and Verification ("M&V") Plan.

Exh. MOU-1 at 2-3.

46. The Docket 7704 MOU provides that GMP will update or revise its AMI Plan based on any significant changes to the Plan, including implementation schedules. GMP will update the Business Case in the event that a revision or update causes a material impact (5% or more) on the NPV calculation. GMP will provide the Department with detailed information on the update or revision at least two weeks prior to filing the proposal with the Board. Such revision or update would not be considered to be part of the approved AMI Plan until the Board approves the

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6. This Order does not address whether there should be any accommodation of customers who for various reasons may seek not to adopt smart-meter technology. This issue will be further explored in the future in order to ensure that any opt-out policy is approved prior to implementation.

change. Exh. MOU-1 at 3.

47. The Docket 7704 MOU indicates that GMP will provide comprehensive annual updates to the AMI Plan and Business Case no later than 60 days prior to preliminary filing of its non-power costs under its Alternative Regulation Plan ("ARP") throughout the implementation of the AMI Project. Exh. MOU-1 at 3.

48. The Docket 7704 MOU provides that GMP will meet with the Department every three months throughout the implementation of the AMI Project to update the Department on the status of the AMI Plan and Business Case. Exh. MOU-1 at 3.

#### *Cost Recovery*

49. The Docket 7704 MOU provides that GMP will be entitled to the cost recovery assurances described in the Docket 7307 MOU as modified and approved by the Board in its August 2, 2009, and November 16, 2009, Orders. Costs incurred for the CIS and grid automation components are not entitled to such cost-recovery assurances. Exh. MOU-1 at 3.

50. The AMI Plan provides that GMP will be able to recover all incremental costs identified in its Business Case that are prudently incurred and that quantifiable benefits will be realized and applied to reduce costs. GMP AMI Plan at 33.

51. The GMP AMI Plan provides that incremental rate-year costs and benefits from GMP's approved Business Case that meet the known and measurable standard and are normally recorded in GMP's uniform system of accounts will be included in its cost of service/annual base rate filing. GMP AMI Plan at 33.

52. The GMP AMI Plan provides that incremental rate-year costs and benefits that do not meet the known and measurable standard at the time of the cost of service/annual base rate filing may be recorded as a regulatory asset/liability if incurred or realized in the rate year provided that the costs and benefits are in compliance with the approved Business Case. GMP AMI Plan at 33.

53. The GMP AMI Plan provides that the amount deferred will be calculated by deducting the AMI costs and benefits collected through rates in the rate-year from the lesser of either the rate year actual costs and benefits or the costs and benefits identified in the most current approved Business Case. The deferred costs and benefits will be recovered from or returned to

ratepayers in GMP's next cost of service/annual base rate filing. GMP AMI Plan at 33.

54. The GMP AMI Plan provides that incremental rate-year costs and benefits that were not recovered through rates or deferred will be recovered or returned to the extent permissible through GMP's Earnings Sharing Adjustment.<sup>7</sup> GMP AMI Plan at 33.

#### **IV. DISCUSSION**

In an Order issued on August 3, 2009, the Board adopted the Docket 7307 MOU which included a provision allowing a utility discretion to seek pre-approval of its AMI implementation plan. In that Order, the Board stated that "we expect that any utility AMI implementation plan that is significant in scope will be submitted to the Board for review and approval."<sup>8</sup> GMP's AMI Project involves implementation throughout GMP's service territory and the costs are expected to exceed \$20 million; accordingly, the Project is significant in scope.

GMP has provided a detailed Business Case, including a cost/benefit analysis, to support its decision to implement AMI in its service territory. Based on this analysis, the Project is expected to be cost-effective for GMP and its customers. GMP maintains that the benefits expected to arise under the AMI Plan will help to lower costs for the company and enhance service offerings for its customers. According to the Business Case analysis, the NPV of benefits would be \$503,144 with a 7.9% internal rate of return for the most likely scenario of costs and benefits. Accordingly, GMP has estimated that the benefits will be greater than the costs associated with AMI implementation. GMP also asserts that implementation of the AMI Plan will create additional substantial benefits for its customers that are difficult to quantify.

The Department and GMP assert that under the terms of the Docket 7704 MOU, GMP's AMI Plan is reasonable and recommend that it be approved by the Board. I agree; accordingly, I recommend that the Board approve the AMI Plan subject to the limitations described in the Docket 7704 MOU. I recommend that the Board approve the Docket 7704 MOU in its entirety.

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7. See Docket 7585 Order of 4/16/10 at 12 for a detailed explanation of GMP's Earnings Sharing Adjustment mechanism.

8. Docket 7307 Order of 8/3/09 at 32-33. The Order continues: "Determination of significance should be based upon each utility's specific circumstances and the scope and cost of the AMI project relative to the utility's overall costs."



I find that the implementation of AMI in GMP's service territory is in the public interest, especially in light of the SGIG award received by the eEnergy Vermont Project from the U.S. DOE that will substantially reduce the cost to ratepayers. The terms of the SGIG program require GMP to satisfy DOE requirements and implementation schedules and to complete the Project by April 2013. It appears that the AMI Plan will provide flexibility for GMP to move forward with AMI implementation in order to meet these goals while continuing to ensure that its approach for technology decisions remains reasonable.

GMP and the Department have outlined a reasonable review and update process for continuing evaluation of the AMI Plan. In the 7704 MOU, GMP and the Department agree to several additional filings to supplement the AMI Plan. I recommend that the Board adopt the requirement for GMP to file for approval of the items described in the findings above. However, GMP is ready to proceed with certain aspects of the AMI Plan, specifically the Elster AMI solution. I recommend that the Board provide specific approval for GMP to move forward with implementation of the portion of its AMI Plan associated with the Elster AMI solution.

The 7704 MOU provides that, upon approval of the GMP AMI Plan, GMP will be entitled to the cost-recovery assurances in the Docket 7307 MOU as modified and approved by the Board. Based on the parties' agreement for subsequent AMI-related filings, further involvement of the Board and Department will be necessary to address cost-recovery assurance issues. I also note that in the August 3 Order in Docket 7307, the Board stated: "Our determination that a [AMI Implementation] Plan is acceptable will not shield a utility from a subsequent investigation and potential disallowance based upon the economic used-and useful principle if events following approval should have led to an alteration of the AMI deployment."<sup>9</sup> Accordingly, I stress the importance of GMP, with coordination from the Department, continually reevaluating its implementation decisions and seeking Board approval as necessary.

## **V. CONCLUSION**

When I examine all elements of GMP's AMI Plan along with the terms and conditions of the Docket 7704 MOU, I find that the AMI Plan proposal is reasonable, and recommend that the

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9. Docket 7307 Order of 8/3/09 at 36.

Board support GMP's decision to move forward with AMI implementation at this time.

The parties have waived their right to service of the Proposal for Decision in accordance with 3 V.S.A. § 811.

Dated at Montpelier, Vermont this 14<sup>th</sup> day of July, 2011.

s/Andrea C. McHugh

Andrea C. McHugh

Hearing Officer

## **VI. BOARD DISCUSSION**

We adopt the Hearing Officer's recommendations in full. However, we note that GMP's AMI Plan was filed before the recently announced proposed merger between GMP and CVPS. At this time, we do not know how, or whether, GMP's proposed AMI Plan would be altered if the Board ultimately approves the merger. Moreover, we want to ensure that GMP and CVPS are considering revisions to their AMI Plans that would, if the merger is approved, lead to further efficiencies. Therefore, we remind GMP and CVPS that we expect them each to fulfill their responsibility to take all appropriate steps with respect to their AMI Plans to ensure compatibility of systems, and to capture any available efficiencies, should the merger be consummated.

## **VII. ORDER**

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that:

1. The Findings and Recommendations of the Hearing Officer are adopted.
2. The Docket 7704 Memorandum of Understanding between Green Mountain Power Corporation and the Vermont Department of Public Service concerning the implementation of the Advanced Metering Infrastructure Plan is approved.
3. The Advanced Metering Infrastructure Plan is approved consistent with the terms of the Docket 7704 Memorandum of Understanding and the Docket 7307 Memorandum of Understanding, as approved and modified by the Public Service Board.
4. The Review and Update Process called for under the Advanced Metering Infrastructure Plan satisfies the objectives of the regulatory review processes set forth in the Docket 7307 Memorandum of Understanding and is therefore approved.
5. This Order does not constitute a finding of prudence with respect to any individual cost set forth in the Advanced Metering Infrastructure Plan. However, compliance with the Advanced Metering Infrastructure Plan and related Public Service Board orders shall entitle Green Mountain Power Corporation to the cost-recovery protections, assurances, and treatment set forth in the Advanced Metering Infrastructure Plan, the Docket 7704 Memorandum of Understanding, and the Docket 7307 Memorandum of Understanding, as modified and approved.

Dated at Montpelier, Vermont, this 22<sup>nd</sup> day of July, 2011.

<u>s/James Volz</u>	)	
	)	PUBLIC SERVICE
	)	
<u>s/David C. Coen</u>	)	BOARD
	)	
	)	OF VERMONT
<u>s/John D. Burke</u>	)	

OFFICE OF THE CLERK

FILED: July 22, 2011

ATTEST: s/Susan M. Hudson  
Clerk of the Board

*NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@state.vt.us)*

*Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.*